

4 sectors], each of the first and second sectors [sector] within said group includes first
5 and second servo fields [a first field and a second field], the first servo field in each
6 of the first and second sectors [sector identifying a value in the corresponding
7 second field, each value in the second field of each sector] providing a portion of
8 higher order bits of a track position information, the second servo field in each of the
9 first and second sectors providing lower order bits of the track position information,
10 the first servo fields of the first and second sectors and the second servo field in one
11 of the first and second sectors [the values in the second fields within the group of
12 sectors], in combination, providing the track position information.

1 2. (Thrice Amended) The disk as recited in claim 1, wherein the group
2 includes a third sector having first and second servo fields, the first servo field in the
3 third sector providing a portion of higher order bits of the track position
4 information, and the second servo field in the third sector providing lower order bits
5 of the track position information, the first servo fields of the first, second, and third
6 sectors and the second servo field in one of the first, second, and third sectors, in
7 combination, providing the track position information [each track including at least
8 one group of consecutive sectors].

1 3. (Thrice Amended) The disk as recited in claim 2 [1], wherein the
2 group includes a fourth sector having a first servo field, the first servo field in the
3 fourth sector of the group providing a disk side position of the disk [each sector
4 within said group including a third field identifying a track position of the disk, the
5 first and second fields in the group of sectors, and the third field in one of the
6 sectors, in combination, providing complete position information of the disk].

1 4. (Thrice Amended) The disk as recited in claim 3 [1], wherein the
2 group includes a fifth sector having a first servo field, the first servo field in the
3 fourth and fifth sectors, in combination, providing the disk side position of the disk
4 [when the first field in a sector is at a first value, the corresponding second field
5 identifies a quadrant of the disk].

1 5. (Thrice Amended) The disk as recited in claim 4, wherein the group
2 includes a sixth sector having a first servo field, the first servo field in the sixth
3 sector providing a quadrant of the disk [when the first field in a sector is at a second
4 value, the corresponding second field identifies a side of the disk].

1 6. (Thrice Amended) The disk as recited in claim 5, wherein each track
2 includes a plurality of groups each having six sectors, wherein complete disk
3 positional information is obtained by reading one of the plurality of groups of six
4 sectors [when the first field in a sector is at a third value, the corresponding second
5 field identifies higher order bits of position information].

1 7. (Thrice Amended) The disk as recited in claim 1, wherein the first
2 servo field of the first and second sectors each includes a sector sequence number
3 field and a servo multiplex data field, a sequence number in the sector sequence
4 number field identifies a value in the corresponding servo multiplex data field as the
5 portion of the track position information [the first field in one sector within the

6 group of sectors is at a first value to identify the corresponding second field as a
7 quadrant of the disk, the first field in at least one additional sector within the group
8 of sectors is at a second value to identify the corresponding second field as a side of
9 the disk, and the first field in at least another additional sector within the group of
10 sectors is at a third value to identify the corresponding second field as a track
11 position information].

1 8. (Thrice Amended) The disk as recited in claim 5, wherein the first
2 servo field in each of the first through six sectors of the group includes a sector
3 sequence number field and a servo multiplex data field, a sequence number in the
4 sector sequence number field identifies a value in the corresponding servo multiplex
5 data field [7, wherein the combination of values in the second fields of the sectors
6 within the group providing the quadrant, side, and track of the disk].

1 9. (Thrice Amended) The disk as recited in claim 8 wherein when the
2 sequence number is at a first number, the value in the corresponding servo
3 multiplex data field represents the portion of the higher order bits of the track
4 position information, where when the sequence number is at a second number, the
5 value in the corresponding servo multiplex data field represents a portion of the
6 disk side position of the disk, and wherein when the sequence number is at a third
7 number, the value in the corresponding servo multiplex data field represents the
8 quadrant of the disk [1, wherein the second field in a first sector within the group
9 providing a quadrant of the disk, the second fields in second and third sectors
10 within the group providing a side of the disk, and the second fields in fourth, fifth,
11 and sixth sectors within the group providing higher order bits of a track position,

12 each sector within the group further including a third field identifying lower order
13 bits of the track position].

1 10. (Thrice Amended) A hard disk drive, comprising:

2 a housing;

3 a spin motor mounted to said housing;

4 an actuator arm mounted to said spin motor;

5 a disk attached to said spin motor, said disk having at least one side with a

6 plurality of tracks, each track including a group having first and second sectors, each

7 of the first and second sectors within said group includes first and second servo

8 fields, the first servo field in each of the first and second sectors providing a portion

9 of higher order bits of a track position information, the second servo field in each of

10 the first and second sectors providing lower order bits of the track position

11 information, the first servo fields of the first and second sectors and the second servo

12 field in one of the first and second sectors, in combination, providing the track

13 position information [each track including at least one group of sectors, each sector

14 within said group includes a first field and a second field, the first field in each

15 sector identifying a value in the corresponding second field, each value in the

16 second field of each sector providing a portion of position information, the values in

17 the second fields within the group of sectors, in combination, providing the position

18 information]; and

19 a read/write head mounted to said actuator arm for reading said at least one

20 side of said disk.

1 11. (Thrice Amended) The hard disk drive as recited in claim 10, wherein
2 the group includes a third sector having first and second servo fields, the first servo
3 field in the third sector providing a portion of higher order bits of the track position
4 information, and the second servo field in the third sector providing lower order bits
5 of the track position information, the first servo fields of the first, second, and third
6 sectors and the second servo field in one of the first, second, and third sectors, in
7 combination, providing the track position information [each track including at least
8 one group of consecutive sectors].

1 12. (Thrice Amended) The hard disk drive as recited in claim 11 [10],
2 wherein the group includes a fourth sector having a first servo field, the first servo
3 field in the fourth sector of the group providing a disk side position of the disk [each
4 sector within said group including a third field identifying a track position of the
5 disk, the first and second fields in the group of sectors, and the third field in one of
6 the sectors, in combination, providing complete position information of the disk].

1 13. (Thrice Amended) The hard disk drive as recited in claim 12 [10],
2 wherein the group includes a fifth sector having a first servo field, the first servo
3 field in the fourth and fifth sectors, in combination, providing the disk side position
4 of the disk [when the first field in a sector is at a first value, the corresponding
5 second field identifies a quadrant of the disk].

1 14. (Thrice Amended) The hard disk drive as recited in claim 13, wherein
2 the group includes a sixth sector having a first servo field, the first servo field in the

3 sixth sector providing a quadrant of the disk [when the first field in a sector is at a
4 second value, the corresponding second field identifies a side of the disk].

1 15. (Thrice Amended) The hard disk drive as recited in claim 14, wherein
2 the first servo field in each of the first through six sectors of the group includes a
3 sector sequence number field and a servo multiplex data field, a sequence number in
4 the sector sequence number field identifies a value in the corresponding servo
5 multiplex data field [when the first field in a sector is at a third value, the
6 corresponding second field identifies higher order bits of position information].

1 16. (Thrice Amended) The hard disk drive as recited in claim 15 wherein
2 when the sequence number is at a first number, the value in the corresponding servo
3 multiplex data field represents the portion of the higher order bits of the track
4 position information, where when the sequence number is at a second number, the
5 value in the corresponding servo multiplex data field represents a portion of the
6 disk side position of the disk, and wherein when the sequence number is at a third
7 number, the value in the corresponding servo multiplex data field represents the
8 quadrant of the disk [10, wherein the second field in a first sector within the group
9 providing a quadrant of the disk, the second fields in second and third sectors
10 within the group providing a side of the disk, and the second fields in fourth, fifth,
11 and sixth sectors within the group providing higher order bits of a track position,
12 each sector within the group further including a third field identifying lower order
13 bits of the track position].

1 17. (Thrice Amended) A method for providing servo information on a
2 disk in a hard disk drive, comprising:

3 a) providing a disk having at least one side with a plurality of tracks,
4 each track including a group having first and second sectors, each of the first and
5 second sectors within said group includes first and second servo fields, the first
6 servo field in each of the first and second sectors providing a portion of higher
7 order bits of a track position information, the second servo field in each of the
8 first and second sectors providing lower order bits of the track position
9 information [each track including at least one group of sectors, each sector within
10 said group including a first field and a second field, the first field in each sector
11 identifying a value in the corresponding second field, each value in the second
12 field of each sector providing a portion of position information];

13 b) reading the first servo fields of the first and second sectors and the
14 second servo field in one of the first and second sectors [said first and second
15 fields in the group of sectors]; and

16 c) determining track position information of the disk in response to
17 reading the first servo fields of the first and second sectors and the second servo
18 field in one of the first and second sectors [the first and second fields in the group
19 of sectors].

1 18. (Thrice Amended) The method as recited in claim 17, wherein the group
2 includes a third sector having a first servo field providing a disk side position of the disk
3 [each sector within the group of sectors including a third field], and wherein reading
4 comprises reading the first servo fields of the first through third sectors and the second
5 servo field in one of the first and second sectors, and wherein determining comprises
6 determining track position information and disk side position of the disk [act c)

7 comprises determining complete position information of the disk in response to reading
8 the first and second fields in the group of sectors, and reading the third field in one of
9 the sectors within the group].

1 19. (Thrice Amended) The method as recited in claim 18 wherein the
2 group includes a fourth sector having a first servo field providing a quadrant of the
3 disk, and wherein reading comprises reading the first servo fields of the first
4 through fourth sectors and the second servo field in one of the first and second
5 sectors, and wherein determining comprises determining track position information,
6 disk side position, and quadrant of the^{disk}17, wherein each sector within the group of
7 sectors including a third field, and wherein act c) comprises determining a quadrant,
8 side, and track of the disk in response to reading the first and second fields in the
9 group of sectors, and reading the third field in one of the sectors within the group].

1 20. (Thrice Amended) The method as recited in claim 17, wherein each
2 track includes a plurality of groups [act c) comprises:
3 determining a quadrant of the disk in response to reading the first and second
4 fields in a first sector within the group;
5 determining a side of the disk in response to reading the first and second
6 fields in a second sector within the group;
7 determining higher order bits of a track of the disk in response to reading the
8 first and second fields in a third sector within the group; and
9 determining lower order bits of the track of the disk in response to reading a
10 third field in one of the sectors within the group].